## ABSTRACT

The present invention provides an enzyme electrode exhibiting good measurement performance under wide ranges of the application conditions, being excellent in durability during long-term use and further being producible with a higher yield, as well as a process for manufacturing the enzyme electrode employing a wafer process particularly suitable to mass production. An enzyme electrode according to the present invention comprises an electrode 2 formed on an insulating substrate 1, an immobilized enzyme layer 4 formed over the electrode 2, and a permeation-limiting layer 6 placed on the uppermost surface and over the immobilized enzyme layer 4, wherein on the immobilized enzyme layer 4 is optionally formed an adhesion layer 8 comprising a silane-containing compound, on whose upper surface is formed the permeation-limiting layer 6; or the permeation-limiting layer 6 may be a film mainly comprising a fluorine-containing polymer in which a number of grooves are built on its surface, or alternatively the film has an irregular surface having a surface roughness of 0.0001 or more and 1 or less fold to its average thickness being selected within a range of 0.01 to 1 μm.